

Manipulation of profits in Italian publicly funded health care trusts

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SUMMARY

This paper examines the prevalence of earnings management in state-funded Italian health care local Trusts. The Italian setting is unique in that ‘balanced-budget’ requirements have been put forth by legislators. Furthermore, small negative and positive deviations from the balanced-budget bear different consequences. We find no evidence of manipulation when Trusts post small losses. However, we find the Trusts manipulate discretionary accruals, provisions and non-operating expenses to reduce small positive deviations from zero-profit.

IMPLICATIONS

The findings shed some light on potential incentives provided by a balanced-budget regime and thus are important for policy-makers in informing discussions on changes in financial reporting requirements, which may have unintended consequences. Specifically, policy-makers interested in mandating a ‘balanced-budget’ within the health care sector or any sector that offers public services, should be aware of potential manipulation of reports both through accruals, and, importantly, through cuts in expenses, which may ultimately affect the level and quality of the services provided. The results from the Italian case allows generalisations to be drawn for other countries seeking to implement balanced-budget plans in their National Health Care Systems such as the UK.

JEL classifications: M41, L31

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health care Trusts.

1. Introduction

Evidence of manipulation of reported profits, commonly referred to as earnings management, is prevalent in the for-profit sector (e.g., Jones, 1991; Barua *et al.*, 2006; Xu, 2016). However, research in the non-profit sector is limited. Existing evidence from the non-profit sector finds the zero-profit threshold to be an important benchmark creating incentives for earnings management (Leone and Van Horn, 2005; Jegers, 2013). This paper investigates the presence and sources of earnings management in the state-funded Italian local health care Trusts (that is, Azienda Sanitaria Locale, or ASL) during the period 2010-2013. Italy currently is the only country in the EU which has a 'balanced-budget' mandate at the local government level which spills over to the local health care system. Therefore, the Italian setting is interesting in that it can highlight the potential drawbacks of requiring balanced-budgets in health care institutions.

In the Italian health care context, the importance of balanced-budgets has been reiterated by legislators in 2012 (Law 243/2012), and is a constitutional requirement since 2014.⁵ But even prior to this, the ASLs were expected to meet the annual budget target set by the regional authorities. Although the budget constraints on the Italian National Health Service (hereafter, NHS) have been described as “typically soft”, several measures to strengthen them have been taken (see Tediosi *et al.*, 2009). Particularly since 2008, failure by the regional governments, which are responsible for allocating the financial resources to ASLs, to deliver a balanced-budget would mean that they would be placed under temporary compulsory administration and that they would have to increase regional fiscal rates (Tediosi *et al.*, 2009). So, even though the present study does not consider, due to data constraints, the period when the balanced-budget rule is implemented via the Constitution, it covers a period that ASLs were required to produce balanced-budgets by the regional authorities they belong

⁵ The balanced-budget rule is implemented via the Constitution which means the law has a higher status than ordinary law. Information regarding this law can be found in the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG).

to, and the latter were aware that the balanced-budget rule was going to be enacted as a constitutional mandate.

The objective of the present study is twofold; namely, to investigate the existence of earnings management in the ASLs' financial statements, and to identify the extent of manipulation when the projected performance of the ASL is below or above the break-even.⁶ Accumulating large deficits are to be avoided, as they could lead to early termination of the top management of the ASL. However, small deviations from the break-even might bear different consequences for the managers of the ASLs depending on whether a small surplus or deficit is projected. Against this background, we examine whether ASL managers use income-increasing and/or decreasing techniques, and we draw hypotheses regarding the differing incentives for managers when they project earnings just above or below the break-even. Furthermore, we investigate whether ASLs engage in accrual and/or real activities manipulation.

2. Literature Review

2.1 Evidence of earnings management in non-profit and public health care organizations

The active manipulation of income towards a predetermined target is typically termed 'earnings management' in the literature, and can be achieved through the management of accruals and/or real accounts (e.g., Kothari *et al.*, 2016). Ample evidence has been produced in the for-profit sector pointing to its occurrence around certain benchmarks and across different industries (e.g., Burgstahler and Dichev, 1997; Gore *et al.*, 2007). Particularly for the for-profit health care sector, Dong (2015) finds that health services providers in 43 countries manipulate accounting accruals to avoid financial distress caused mainly by rising

⁶ The terms 'income' and 'earnings' are used interchangeably within the paper.

labour costs. This study also stresses the relative absence of related research for the non-profit health care sector.

There are, indeed, relatively limited studies on the use of earnings management techniques in the non-profit sector, although the bulk of evidence points to the use of earnings management to report small positive income (Pina *et al.*, 2012). Particularly for the health care sector, evidence from the US suggests that non-profit health care providers manage their reported earnings to just above zero both by manipulating accruals (e.g., Mensah *et al.*, 1994; Leone and Van Horn, 2005) and by real activities-based earnings management (e.g., Eldenburg *et al.*, 2011). Hsu and Qu (2012), in a different context, also report that US hospitals engage in real activities-based manipulations to pursue their own goals. There is, also, evidence which suggests that US hospitals manipulate discretionary accruals to report higher income, but only if this income is not perceived as excessive by the stakeholders (Vansant, 2016).

Prior research examining earnings management in *public* health care systems, although relatively limited, also finds evidence of pervasive earnings management. Evidence from the Norwegian public health care system finds that hospitals increase profits through manipulation of billing (Anthun *et al.*, 2016). In addition, evidence from the UK NHS shows that managers use accounting discretion in accruals to report income within a range close to zero (Ballantine *et al.*, 2007; Ballantine *et al.*, 2008). Finally, Boterenbrood (2014) finds that Dutch hospitals smooth their income by managing their revenues.

Incentives for earnings management in the for-profit sector exist through compensation, pressure from investors, contractual agreements, and political pressures (see Healy and Wahlen, 1999 and Xu *et al.*, 2007 for a review of related literature). However, incentives for non-profit organizations differ and include fear of penalties and fear of change in the management team, especially if losses occur (Ballantine *et al.*, 2007; Leone and Van

Horn, 2005; Vinnari and Näsi, 2008). Other incentives include maintaining the tax-exempt charitable status of the organization (Wood, 2001). Furthermore, high reported earnings might result in lower future donations (Frank *et al.*, 1989), and the deterioration in the bargaining position against other stakeholders such as employees and suppliers (Leone and Van Horn, 2005; Tan, 2011). It might also mean increased scrutiny from the government (Eldenburg *et al.*, 2011). Perceived profit manipulation can also increase the cost of future debt (Bernet *et al.*, 2008). However, many of these incentives might not be relevant in public non-profit organizations.

2.2 The Italian context and hypotheses development

In this paper, we seek to identify whether public ASLs engage in income-increasing and/or income-decreasing earnings management activities to achieve the balanced-budget target required by Italian regional and federal authorities. Prior research showing that accounting information at the Italian local government level is used to influence public opinion and to win political benefit, in fact, prompts for such an examination (Guarini, 2016). To date, research on the quality of reported earnings in the Italian non-profit health care sector is still in its infancy, mostly due to the limited availability of relevant accounting data (Lega and Vendramini, 2008).

Distinguishing between income-increasing and/or income-decreasing earnings management activities is important in this stream of research given the asymmetric incentives that profits and losses might create for managers. While the positive incentives for managers to present profits are well documented, even for non-profit enterprises, there is growing interest in research for profit avoidance (see discussion in Vansant, 2016). The case of the Italian health care sector offers a unique laboratory for assessing such activities, as it is a health care industry funded predominately by governmental funds where managers' losses

must be covered by regional government taxes, and profits can potentially reduce the amount of regional financing to the ASL for the following year.

The law defining the terms of employment between regions and the manager of the ASL (Decree n.319/2001) dictates that their annual salary, which also includes a variable part in the form of a bonus, is determined both by the ASLs' efficacy in the provision of health care services and its financial performance. Moreover, the legislator states that although the terms of employment are fixed-term (3-5 years), the employment contract is renewable. Finally, the law gives the manager full autonomy over the allocation of human and financial resources available to the ASL. The terms of the ASLs' employment, therefore, suggest that they have the incentive to present economic data that would be construed desirable by the regional authorities, which currently require a zero-profit level of performance. In the case of small negative deviations from zero (i.e. small losses), we would therefore expect the following:

H₁: ASLs that are just below the zero profit benchmark will use income-increasing accrual- and/or real activities-based earnings management to achieve that target.

From the perspective of the ASLs' managers, however, a marginal loss is compensated at the regional level by higher taxes and tighter control of health care expenditures. On the contrary, financial surpluses could lead to a reduction of regional funding for the next fiscal year. Regional criteria for the allocation of funds to ASLs although based on a weighted capitation system are also adjusted to reflect historical spending (Lo Scalzo *et al.*, 2009). If ASLs managers' private incentives, therefore, are not synchronized with those of the regional governments for delivering balanced-budgets, and their primary objective is to maintain their level of funding, then we would expect that ASLs managers would strategically manage away small positive earnings towards the zero benchmark. This assumption is reflected in the following hypothesis:

H₂: ASLs that are just above the zero profit benchmark will use income-decreasing accrual- and/or real activities-based earnings management to achieve that target.

3. Sample Selection and Variables Examined

In our study, we consider all Italian ASLs with available financial data for the period 2009-2013. In recent years, the Italian legislation has been vastly modified in matters of transparency and public availability of information concerning the activities of public institutions at both the national and local levels. In particular, the Legislative Decree n.118/2011 (and later Decree n.33/2013) advocates transparency in the Public Administration and requires the publication of the ASLs' financial statements. Furthermore, as introduced by the Decree n.97/2016 art.6, public institutions have the obligation to publish the information in a special section of their website and ensure the integrity, the completeness and the easy accessibility of data (Art. 9-bis comma 2; Decree 33/2014). Despite this, many ASLs do not report financial statements on their websites. Therefore, the main source of data collection is from a database, published by the Ministry of Health that contains the income statements of each health care local Trust between 1997 and 2013.⁷ The collection of required balance sheet data was conducted by visiting the web page of each Trust separately.

At the time of this study, out of the total 140 ASLs only 48 reported any balance sheet and income statement data, with 41 ASLs reporting information relating to this 5-year period (27 located in the North of Italy and 14 in the South of Italy).⁸ We lose one year of observations from our sample as the variables enter our empirical estimations first-differenced, leaving us with 159 firm-year observations.

Since 2011 (Decree n.118/2011), all ASLs in Italy must produce their financial

⁷ Ministry of Health data can be found at:

http://www.salute.gov.it/portale/temi/p2_6.jsp?id=1314&area=programmazioneSanitariaLea&menu=vuoto

⁸ Information about the ASLs considered in our examinations is available from the authors upon request.

statements in adherence to national accounting standards, consistent with the EU directives related to the reporting of the financial performance in the Public Administration. The database used for data collection was set up in adherence to the 2011 accounting standards, while any ASL financial information on their websites were later restated in adherence to the Decree n.118/2011. Therefore all data from financial statements in the study are prepared with the same accounting standards.

The financial statements under EU directives follow accrual accounting (Pina *et al.*, 2009). However, accrual accounting has been shown in the literature to provide opportunities for earnings management (Healy and Wahlen, 1999). In this study, we examine the extent to which ASLs use accruals to manage profits or losses towards the zero-profit target. We also examine whether ASLs use real activity revenues and expenses to reach zero-profit. Particularly, we focus our examination on 3 types of ASLs' accruals and 3 types of their real activities, and we investigate if the managing directors of ASLs manipulate them to manage earnings.

To do so, we follow the empirical specification developed by Eldenburg *et al.* (2011). This specification allows capturing systematic patterns in possible objects of real activities- and accruals-based earnings management when ASLs' projected earnings undershoot or exceed the break-even benchmark by a specified range. 'Projected earnings' is defined as the current year's net profit/loss before the proxy of discretionary accrual or real earnings management plus this proxy's value for the previous year. 'Projected earnings' stands, therefore, for the net earnings of an ASL if the object of earnings management had the same value as that of the previous year.

We derive metrics for the three types of accruals used to test for the presence of accruals-based earnings management in the spirit of Dechow *et al.* (1995) with the modifications proposed by Kothari *et al.* (2005). Particularly, we use proxies for the

discretionary level of total accruals (DAC) and of the current accruals ($DCAC$). These metrics stand for the level of annual total and current accruals (excluding depreciation and amortization) that are not in line with expectations, and thus indicating that judgment is used in setting them. We also use the changes in the level of provisions capturing longer term accruals ($\Delta PROV$). Contrary to accrual manipulation, real-activities manipulation means that managers use judgment in real operations such as delaying investments or encouraging revenues through offering discounts (e.g., see Roychowdhury, 2006). To test for real activities manipulation, we follow Eldenburg *et al.* (2011) by examining changes in revenues not related to the health care activities ($\Delta NHREV$), and changes in expenses that are not associated with the health care of patients ($\Delta NHEXP$) and the operating activities of ASLs ($\Delta NOEXP$). [Table 1](#) reports details about the calculation of each of the above variables.

-[Table 1](#) somewhere here-

Given that the level of expenditures in the ASLs is linked to budgets that are set by the regional government, we also consider whether any significant budgetary changes have occurred within the study period. In the timeframe relevant to the analysis (2010-2013), the total annual change has been below 1% per year. The most populated regions (e.g. Piemonte, Lombardia, Veneto, Emilia Romagna, Toscana, Lazio, Campania, and Sicilia) reported annual variations in health care budgets between 1 and 2 percent. Smaller regions (such as Bolzano and Valle d'Aosta) reported an annual change larger than 4 percent (both positive and negative). Since no major change in the financing of health care emerges from the reporting of current expenditures, it can be assumed that the impact of national financing constraints on the performance of individual ASLs during the observation period was negligible.⁹

⁹ We do not report the data for the annual variation in the publicly financed health care expenditures for reasons of brevity, but they are available from the authors upon request.

4. Evidence of earnings management in the ASLs

We show in [Figure 1](#) the distribution of the realized profit figures of the ASLs. Particularly, we plot the realized deflated net earnings (net income divided by total assets in the beginning of the period) with histogram interval widths of 0.02. We find that most ASLs report earnings close to the zero benchmark with 104 observations falling within the range of -0.02 to 0.02. In our sample we have only 28 observations depicting great losses ranging from -0.20 to -0.04, and the vast majority of them can be found during the years 2010 and 2011.

-[Figure 1](#) somewhere here-

Although the balanced-budget mandate came into effect in 2014, it has been approved by the Italian lawmakers since early 2012. A casual observation of the distribution of the realized deflated net earnings reveals two notable differences between the period of 2010-2011 and that of 2012-2013. First, during the latter period ASLs did not report large losses. Second, during the period before 2012, the ASLs most commonly reported negative, and, in particular, small losses. In sharp contrast, during the years 2012 and 2013 the vast majority of ASLs reported small profits. The evidence for the post-2012 period is in line with what is observed in studies from the US and UK health sector, where most hospitals report on average small profits (e.g., Ballantine *et al.*, 2007; Eldenburg *et al.*, 2011; Leone and Van Horn, 2005).

We test the smoothness of the frequency distributions shown in [Figure 1](#) using the standardized differences in a similar fashion to Burgstahler and Dichev (1997). These are measured as the difference between the actual number of observations in the interval (or histogram bin) and the expected number of observations, divided by the estimated standard

deviation of the difference.¹⁰ The expected number of observations in an interval is taken to be equal to the average of the two adjacent intervals. The results are presented in [Table 2](#).

-[Table 2](#) somewhere here-

For the full sample (2010-2013), the standardized differences for the intervals around zero $[-0.01, 0)$ and $[0.01, 0.02)$ are -2.173 and -2.450, respectively (significant at the 5% and 1% levels, respectively). Furthermore, the standardized difference for the interval including zero profit $[0, 0.01)$ is 4.386 (significant at the 1% level). This indicates that ASLs seem to shift from the intervals to the immediate left and right of zero towards the interval with zero profit. The same is true for the periods 2010-2011 and 2012-2013, that are shown separately in the second and third columns of [Table 2](#). In both periods, however, and especially in 2012-2013, the statistical significance of the standardized differences is higher in the interval to the right of zero compared to that to the left of zero, implying that shifts are more likely from positive earnings to close to zero earnings (rather than from negative earnings to close to zero earnings).

To formally investigate the extent to which Italian ASLs employ earnings management techniques during the period 2010-2013, we estimate similarly to Eldenburg *et al.* (2011) the following model for each of the earnings management variables in question:

$$EM_{i,t} = a + \beta_1 \times I_{i,t}^B + \beta_2 \times I_{i,t}^A + \beta_3 \times X_{i,t}^r + \beta_4 \times size_{i,t} + \beta_5 \times pop_{i,t} + \beta_6 \times lev_{i,t} + \sum_{j=1}^4 \beta_{6+j} \times X_{i,t}^{2009+j} + \varepsilon_{i,t}. \quad (1)$$

For ASL i in year t EM stands for the variable used to proxy the discretionary accrual or the real earnings management activity under examination (that is, DAC , $DCAC$, $\Delta PROV$, $\Delta NHREV$, $\Delta NHEXP$, or $\Delta NOEXP$). $I^{B(A)}$ is an indicator variable taking the value of 1 if the projected earnings is below (above) the zero-profit target, but lies within the range of

¹⁰ We use intervals of 0.01 for more specificity. Using intervals of 0.02 provide similar results.

$[-0.04, 0)$ $((0, 0.04])$, and 0 otherwise. X^r is an indicator variable capturing regional characteristics and takes the value of 1 if the ASL operates in the north, and 0 if it operates in the south of Italy. *size* stands for the (log) total assets, and *pop* for the (log) of population in the region of an ASL (Data about the number of residents in each ASL's geographic area are from the Italian Ministry of Health databank in 2014). *lev* is total liabilities divided by total equity. Finally, X^{2009+j} is an indicator variable taking the value of 1 for the year shown in the superscript, and 0 otherwise.

We focus, therefore, on the estimates of coefficients β_1 and β_2 . Statistically significant coefficient estimates β_1 and β_2 reveal the presence of a systematic pattern in the accrual metric or in the proxy for real earnings management activity, when normalized projected earnings falls within the $[-0.04, 0)$ or $(0, 0.04]$ range, respectively. Particularly, a positive (negative) and statistically significant estimate β_1 for the variables *DAC*, *DCAC* and *ΔNHREV* (*ΔPROV*, *ΔNHEXP* and *ΔNOEXP*), that are positively (negatively) associated with net earnings, would suggest that ASLs engage in income-increasing earnings management. On the contrary, a negative (positive) and statistically significant estimate β_2 for the variables *DAC*, *DCAC* and *ΔNHREV* (*ΔPROV*, *ΔNHEXP* and *ΔNOEXP*), suggests that ASLs engage in income-decreasing earnings management.

We also include in [Eq. \(1\)](#) variables that capture the impact of other factors on the ASLs' accruals and real activities. Specifically, we include the *size* and *pop* variables to control for the size of the ASL and of the region that they cover, as larger firms have higher discretionary accruals and expenses (e.g., Dechow *et al.*, 1995). We also include the variable *lev*, as firms tend to manipulate earnings when their debt levels are high and they are close to covenant violation (e.g., Jha, 2013). We include the year dummies to control for aggregate changes in relationships over time, and the X^r dummy variable to capture any systematic differences between the ASLs' located in the north and in the south of the country. Finally,

the value of the intercept captures patterns in the earnings' management variables when the projected earnings is far above or below the zero-profit target (that is, larger than +0.4 and smaller than -0.4).

-[Table 3](#) somewhere here-

To start with the empirical estimations, we present Pearson correlation coefficients of all earnings management variables and other variables included in [Eq. \(1\)](#) in [Table 3](#) to check for any issues of potential multi-collinearity. We find, as expected, a high correlation coefficient between the leverage and the size of the firm (coeff. = 0.765). While a high correlation between independent variables is commonly met in accounting research, and is not necessarily harmful, it should not be ignored. In the presence of harmful near multicollinearity the parameter estimates and their statistical significance might be sensitive to small changes in the regression specification. This appears not to be the case here as our model estimates are robust to the exclusion of the correlated variables.¹¹

-[Table 4](#) somewhere here-

We present the results from the estimation of [Eq. \(1\)](#) in [Table 4](#).¹² Our results do not support hypothesis H_1 , as we find no evidence that ASLs manipulate small losses towards the zero-profit target. Specifically, the coefficient β_1 is not significant in any of the equations. On the contrary, we find evidence to support that ASLs with projected earnings just above the benchmark engage in income-decreasing earnings manipulation, in line with hypothesis H_2 . Particularly, in the equations of DAC and $DCAC$ coefficient estimates β_2 are negative and statistically significant, while in the equations of $APROV$ and $ANOEXP$ coefficient estimates β_2 are positive and statistically significant. This means that ASLs manage away positive deviations from the benchmark by systematically reporting lower discretionary total and

¹¹ The results from these estimations are not included here but are available from the authors upon request.

¹² We also measure DAC and $DCAC$ without including ROA as an independent variable, as in Leone and Van Horn (2005), given that performance of ASLs may not be appropriate in determining the level of accruals in non-profit organizations. Un-tabulated results are similar to those reported.

current accruals and by overstating their provisions and non-operating expenses. Previous evidence also finds that hospitals with above-benchmark profits do not report high gains from sale of property in order to avoid showing high profits (Eldenburg *et al.*, 2011). In our study, however, we include property sales proceeds under the category non-Health care revenues, and we do not find any statistically significant results.

5. Concluding Remarks

This paper examines for the first time the earnings management behaviour of public managers of local health care Trusts in Italy. In particular, we study the ASL management's propensity to manage away small deviations (both negative and positive) from the break-even. These results shed some light on the quality of reported earnings by Italian NHS Trusts, contributing to the growing literature which seeks to identify the prevalence of earnings management in the financial statements of public hospitals. Research in this area is relatively limited, and to the best of our knowledge there is no such research for the Italian NHS. To the extent that an entity's financial statement can provide policymakers and the public with a view on the financial and operational performance of the hospital, it is important that this view is accurate not only for reasons of accountability, but also because their perceived quality influences the efficient allocation of future funding (Boterenbrood, 2014).

This study bears implications for other countries considering adopting a balanced-budget rule for their health care Trusts. For example, there have been discussions in the UK about the necessity of a balanced-budget regime in the National Health Care system.¹³ Our results show that in the Italian setting the requirement for balanced-budgets essentially creates incentives for managing earnings down. This finding can, therefore, shed some light on the potential incentives created by balanced-budget plans. Furthermore, if this finding is

¹³ For example, see the arguments by Lord Kerslake, former head of the UK civil service and DCLG permanent secretary, now chair of King's College Hospital, London at: <http://www.publicfinance.co.uk/opinion/2016/11/what-if-nhs-had-balance-its-books-local-government>

confirmed by further evidence from the health care systems of other countries, the outcomes of this study prompt for a review of the public policies pertaining to expected surpluses from state-owned NHS Trusts. The findings of this study could also be relevant to inform the implementation policies of the Fiscal Compact across the EU countries that have agreed to be stricter on delivering balanced-budgets.

Our findings suggest that ASLs manage away small positive deviations from the break-even showing a preference for lowering financial surplus. On the contrary, we find no evidence of earnings management when ASLs expect to report small losses. We attribute this aversion to higher surpluses to ASL managers' concerns for maintaining the level of regional funds intact. We find, therefore, that the quality of the financial statements is aligned with management's incentives. Lo Scalzo *et al.* (2009) claim that the 'overshooting' of budgets has been an enduring characteristic of the Italian health care system at all levels of public administration. In any case, any evidence about competing incentives among the different levels of management in the Italian NHS could be used to inform policies aiming at increasing decentralization of health care services not only in Italy but also internationally.

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TABLES AND FIGURES

TABLE 1

Earnings management variables

<i>Variables</i>	<i>Definition</i>
1. DAC_{it}	<p>Discretionary total accruals of ASL i in year t measured as the residuals from the yearly cross-sectional regressions of the form:</p> $Accruals_{it} = a + b[\Delta(Rev)_{it} - \Delta(Rec)_{it}] + cPPE_{it} + dROA_{it-1},$ <p>where:</p> <p>$Accruals_{it}$ stand for the total accruals of ASL i in year t measured as:</p> $\Delta(Non - Cash Current Assets)_{it} - \Delta(Non - Debt Current Liabilities)_{it} - Depreciation_{it};$ $\Delta(Non - Cash Current Assets)_{it} = \Delta(Inventory)_{it} + \Delta(Rec)_{it} + \Delta(Accrued Income)_{it};$ $\Delta(Non - Debt Current Liabilities)_{it} = \Delta(Provisions)_{it} + \Delta(Payables)_{it} + \Delta(Accrued Liabilities)_{it};$ <p>$\Delta(Rev)_{it}$ = Change in total revenues of ASL i from year $t-1$ to t; $\Delta(Rec)_{it}$ = Change in receivables of ASL i from year $t-1$ to t; PPE_{it} = Gross Property, Plant and Equipment of ASL i in year t; ROA_{it-1} = Return on assets of ASL i in year $t-1$ measured as earnings before extraordinary items over total assets.</p>
2. $DCAC_{it}$	<p>Discretionary current accruals of ASL i in year t measured as the residual from the yearly cross-sectional regressions of the form:</p> $Current Accruals_{it} = a + b[\Delta(Rev)_{it} - \Delta(Rec)_{it}] + cROA_{it-1},$ <p>where $Current Accruals_{it}$ stand for the current accruals of ASL i in year t measured as:</p> $\Delta(Non - Cash Current Assets)_{it} - \Delta(Non - Cash Current Liabilities)_{it}$
3. $\Delta PROV_{it}$	Change in provisions of ASL i from year $t-1$ to year t
4. $\Delta NHREV_{it}$	Change in revenues from non-health care activities (other revenues such as interest on loans provided and increase in value of fixed assets; and revenues from sale of assets) of ASL i from year $t-1$ to year t .
5. $\Delta NHEXP_{it}$	Change in non-health care expenses of ASL i from year $t-1$ to year t (purchase of non-health care services such as cost of laundry, utilities, and insurance premiums + maintenance expenses + administrative salaries + other charges such as rental and leasing fees + depreciation, amortization and impairment expenses)
6. $\Delta NOEXP_{it}$	Change in non-operating expenses of ASL i from year $t-1$ to year t (interest expense)

Notes: This table reports the definitions of the variables and accounts used to test for the presence of earnings management in ASLs.

TABLE 2

Standardized differences in intervals around zero-earnings
benchmark for Net Earnings (deflated)

Interval	Full Sample		2010- 2011		2012- 2013	
[-0.02, 0.01)	0.435		0.888		0.056	
[-0.01, 0.00)	-2.173	**	-2.042	**	-1.801	*
[0.00, 0.01)	4.386	***	3.64	***	3.939	***
[0.01, 0.02)	-2.450	***	-2.308	**	-2.026	**
[0.02, 0.03)	0.158		0.355		0.000	

*/**/*** indicates statistical significance at 90%, 95% and 99% levels, respectively.

TABLE 3
Pearson Correlation Coefficients (p-values)

	<i>DAC</i>	<i>DCAC</i>	<i>ANHREV</i>	<i>APROV</i>	<i>ANHEXP</i>	<i>ANOEXP</i>	<i>X^{reg}</i>	<i>size</i>	<i>pop</i>	<i>lev</i>
<i>DAC</i>	1.000									
<i>DCAC</i>	(0.000)	1.000								
<i>ANHREV</i>	-0.168 (0.034)	0.217 (0.006)	1.000							
<i>APROV</i>	0.044 (0.579)	0.076 (0.339)	0.079 (0.323)	1.000						
<i>ANHEXP</i>	0.120 (0.132)	0.153 (0.054)	-0.105 (0.187)	0.148 (0.063)	1.000					
<i>ANOEXP</i>	0.044 (0.582)	0.008 (0.917)	0.186 (0.019)	0.063 (0.433)	-0.088 (0.271)	1.000				
<i>X^{reg}</i>	0.094 (0.238)	0.073 (0.363)	0.024 (0.768)	0.166 (0.037)	0.010 (0.905)	-0.080 (0.318)	1.000			
<i>size</i>	0.090 (0.260)	0.094 (0.240)	-0.031 (0.697)	0.068 (0.397)	0.016 (0.845)	0.060 (0.454)	1.000			
<i>pop</i>	0.095 (0.235)	0.070 (0.379)	-0.025 (0.754)	0.163 (0.040)	0.091 (0.254)	0.351 (0.879)	0.466 (0.000)	1.000		
<i>lev</i>	0.057 (0.474)	0.059 (0.463)	-0.023 (0.777)	0.108 (0.175)	-0.045 (0.574)	0.096 (0.375)	0.765 (0.000)	0.462 (0.000)	1.000	

Notes: Description of the dependent variables can be found in [Table 1](#), and for the independent variables in the main body of the text.

TABLE 4**Accrual- and Real Activities-based Earnings Management**

Panel A: Accruals and activities positively associated with Net Earnings

	<i>DAC</i>	<i>t-stat</i>	<i>DCAC</i>	<i>t-stat</i>	<i>ΔNHREV</i>	<i>t-stat</i>
α	-0.176	-1.10	-0.172	-0.84	-0.014	-0.15
I^B	-0.003	-0.33	-0.011	-1.44	0.024	0.67
I^A	-0.054***	-3.32	-0.060**	-2.69	0.014	0.48
X^{reg}	0.025**	2.18	0.020	0.89	0.012	0.92
<i>size</i>	0.026***	6.49	0.029***	4.01	-0.005	-0.63
<i>pop</i>	0.011	0.20	0.000	0.01	-0.014	-0.90
<i>lev</i>	-0.014	-0.81	-0.014	-0.71	0.003	0.41
X^{2010}	0.004	0.28	-0.027**	-1.99	0.031**	2.31
X^{2011}	-0.004	-0.57	-0.034***	-3.35	0.034**	2.56
X^{2012}	-0.008	-0.48	-0.034**	-2.09	0.025**	2.15
R ² (%)	4.78%		5.73%		3.96%	

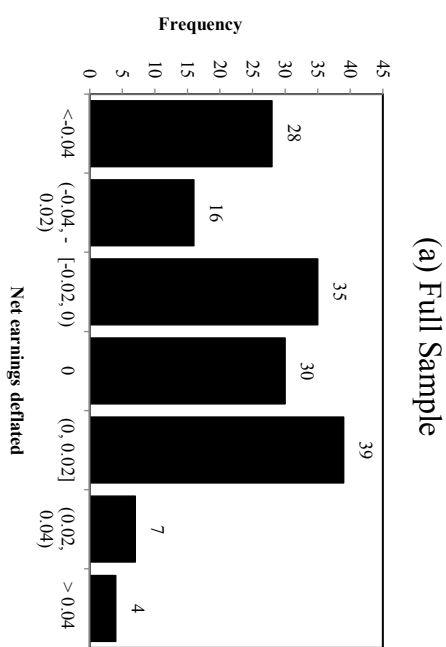
Panel B: Accruals and activities negatively associated with Net Earnings

	<i>ΔPROV</i>	<i>t-stat</i>	<i>ΔNHEXP</i>	<i>t-stat</i>	<i>ΔNOEXP</i>	<i>t-stat</i>
α	-0.045***	-6.57	0.221**	1.94	-0.014	-1.00
I^B	0.001	0.15	-0.039	-0.93	0.001	0.90
I^A	0.015**	2.43	-0.032	-0.81	0.004***	3.82
X^{reg}	0.006***	6.10	-0.014	-0.32	-0.001	-0.78
<i>size</i>	-0.003	-1.30	0.019	1.22	0.000	-0.03
<i>pop</i>	0.010	0.96	0.064***	2.83	0.000	-0.01
<i>lev</i>	0.006	1.59	-0.034	-1.57	0.001	0.79
X^{2010}	-0.004	-1.17	-0.035**	-2.14	0.003***	6.03
X^{2011}	-0.002	-0.60	-0.007	-0.32	0.004***	6.52
X^{2012}	-0.002	-0.52	-0.051**	-1.97	0.003***	5.03
R ² (%)	12.51%		9.74%		20.65%	

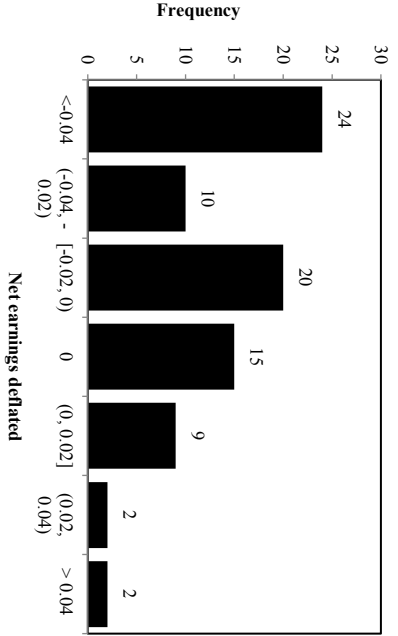
Notes: This table reports the results from the estimation of [Eq. \(1\)](#). Description of the dependent variables can be found in [Table 1](#), and for the independent variables in the main body of the text.

*/**/** indicates statistical significance at 90%, 95% and 99% levels, respectively.

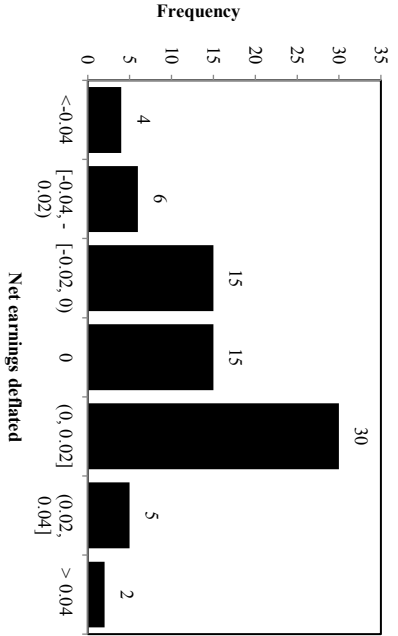
FIGURE 1
ASLS' NET EARNINGS



(b) 2010-2011



(c) 2012-2013



Notes: This figure plots deflated net earnings (net profit/loss divided by total assets in the beginning of the period) with histogram interval widths of 0.02.